



SEQUENCE LISTING

<110> Hahn, Gabriele

<120> Novel Virus Encoded Chemokines Determine the Tissue Tropism of Human Cytomegalovirus (HCMV)

<130> 2923-0545

<140> 10/619,189

<141> 2003-07-15

<160> 79

<170> PatentIn version 3.2

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Tyr Asp Ala Ser His Gly Leu Asp Asn Phe Asp Val Leu Lys Arg Ile
 65 70 75 80

Asn Val Thr Glu Val Ser Leu Leu Ile Ser Asp Phe Arg Arg Gln Asn
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<400> 51

Met Arg Leu Ser Arg Val Trp Leu Ser Val Cys Leu Cys Ala Val Val
 1 5 10 15

Leu Gly Gln Cys Gln Arg Glu Thr Ala Glu Lys Asn Asp Tyr Tyr Arg
 20 25 30

Val Pro His Tyr Trp Asp Ala Cys Ser Arg Ala Leu Pro Asp Gln Thr
 35 40 45

Arg Tyr Lys Tyr Val Glu Gln Leu Val Asp Leu Thr Leu Asn Tyr His
 50 55 60

Tyr Asp Ala Ser His Gly Leu Asp Asn Phe Asp Val Leu Lys Arg Ile
65 70 75 80

Asn Val Thr Glu Val Ser Leu Leu Ile Ser Asp Phe Ile Arg Gln Asn
85 90 95

Arg Arg Gly Gly Thr Asn Lys Arg Thr Thr Phe Asn Ala Ala Gly Ser
100 105 110

Leu Ala Pro His Ala Arg Ser Leu Glu Phe Ser Val Arg Leu Phe Ala
115 120 125

Asn

<210> 52
<211> 240
<212> DNA
<213> Human cytomegalovirus

<400> 52
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tctcgcgcg cgcctgacca aaccggttac aagtatgtgg aacagctcgt ggacctcacg 180
ttgaactacc actacgatgc gagccacggc ttggacaact ttgacgtgct caagaggtga 240

<210> 53
<211> 79
<212> PRT
<213> Human cytomegalovirus

<400> 53

Met Arg Leu Cys Arg Val Trp Leu Ser Val Cys Leu Cys Ala Val Val
1 5 10 15

Leu Gly Gln Cys Gln Arg Glu Thr Ala Glu Lys Asn Asp Tyr Tyr Arg
20 25 30

Val Pro His Tyr Trp Asp Ala Cys Ser Arg Ala Leu Pro Asp Gln Thr
35 40 45

Arg Tyr Lys Tyr Val Glu Gln Leu Val Asp Leu Thr Leu Asn Tyr His

50

55

60

Tyr Asp Ala Ser His Gly Leu Asp Asn Phe Asp Val Leu Lys Arg
 65 70 75

<210> 54

<211> 1977

<212> DNA

<213> Human cytomegalovirus

<400> 54

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<210> 55
 <211> 1741
 <212> DNA
 <213> Human cytomegalovirus

<400> 55	
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<210> 56
 <211> 390
 <212> DNA
 <213> Human cytomegalovirus

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390

<210> 57
<211> 129
<212> PRT
<213> Human cytomegalovirus

<400> 57

Met Arg Leu Ser Arg Val Trp Leu Ser Val Cys Leu Cys Ala Val Val
1 5 10 15

Leu Gly Gln Cys Gln Arg Glu Thr Ala Glu Lys Asn Asp Tyr Tyr Arg
20 25 30

Val Pro His Tyr Trp Asp Ala Cys Ser Arg Ala Leu Pro Asp Gln Thr
35 40 45

Arg Tyr Lys Tyr Val Glu Gln Leu Val Asp Leu Thr Leu Asn Tyr His
50 55 60

Tyr Asp Ala Ser His Gly Leu Asp Asn Phe Asp Val Leu Lys Arg Ile
65 70 75 80

Asn Val Thr Glu Val Ser Leu Leu Ile Ser Asp Phe Ile Arg Gln Asn
85 90 95

Arg Arg Gly Gly Thr Asn Lys Arg Thr Thr Phe Asn Ala Ala Gly Ser
100 105 110

Leu Ala Pro His Ala Arg Ser Leu Glu Phe Ser Val Arg Leu Phe Ala
115 120 125

Asn

<210> 58
<211> 1977
<212> DNA
<213> Human cytomegalovirus

<400> 58

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<210> 59
 <211> 1849
 <212> DNA
 <213> Human cytomegalovirus

<400> 59	
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<210> 60
<211> 240
<212> DNA
<213> Human cytomegalovirus

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<400> 60
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tctcgcgcgc tgcctgacca aaccggttac aagtatgtgg aacagctcgt ggacctcacg 180
ttgaactacc actacgatgc gagccacggc ttggacaact ttgacgtgct caagaggtga 240

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<210> 61
<211> 79
<212> PRT
<213> Human cytomegalovirus

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<400> 61

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Met Arg Leu Cys Arg Val Trp Leu Ser Val Cys Leu Cys Ala Val Val
1           5           10           15

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Leu Gly Gln Cys Gln Arg Glu Thr Ala Glu Lys Asn Asp Tyr Tyr Arg
20           25           30

```

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Val Pro His Tyr Trp Asp Ala Cys Ser Arg Ala Leu Pro Asp Gln Thr
35           40           45

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Arg Tyr Lys Tyr Val Glu Gln Leu Val Asp Leu Thr Leu Asn Tyr His
 50 55 60

Tyr Asp Ala Ser His Gly Leu Asp Asn Phe Asp Val Leu Lys Arg
 65 70 75

<210> 62
 <211> 180
 <212> DNA
 <213> Human cytomegalovirus

<400> 62
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 cgcggtgccgc gggtagcgc agaagaatgt tgcgaattca taaacgtcaa ccacccgccg 120
 gaacgctgtt acgatttcaa aatgtgcaat cgcttcaccg tcgcgtacgt attttcatga 180

<210> 63
 <211> 59
 <212> PRT
 <213> Human cytomegalovirus

<400> 63

Met Ser Pro Lys Asn Leu Thr Pro Phe Leu Thr Ala Leu Trp Leu Leu
 1 5 10 15

Leu Gly His Ser Arg Val Pro Arg Val Arg Ala Glu Glu Cys Cys Glu
 20 25 30

Phe Ile Asn Val Asn His Pro Pro Glu Arg Cys Tyr Asp Phe Lys Met
 35 40 45

Cys Asn Arg Phe Thr Val Ala Tyr Val Phe Ser
 50 55

<210> 64
 <211> 515
 <212> DNA
 <213> Human cytomegalovirus

<400> 64
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<210> 65
 <211> 171
 <212> PRT
 <213> Human cytomegalovirus

<400> 65

Met Ser Pro Lys Asn Leu Thr Pro Phe Leu Thr Ala Leu Trp Leu Leu
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Leu Gly His Ser Arg Val Pro Arg Val Arg Ala Glu Glu Cys Cys Glu
 20 25 30

Phe Ile Asn Val Asn His Pro Pro Glu Arg Cys Tyr Asp Phe Lys Met
 35 40 45

Cys Asn Arg Phe Thr Val Ala Leu Arg Cys Pro Asp Gly Glu Val Cys
 50 55 60

Tyr Ser Pro Glu Lys Thr Ala Glu Ile Arg Gly Ile Val Thr Thr Met
 65 70 75 80

Thr His Ser Leu Thr Arg Gln Val Val His Asn Lys Leu Thr Ser Cys
 85 90 95

Asn Tyr Asn Leu Leu Tyr Leu Glu Ala Asp Gly Arg Ile Arg Cys Gly
 100 105 110

Lys Val Asn Asp Lys Ala Gln Tyr Leu Leu Gly Ala Ala Gly Ser Val
 115 120 125

Pro Tyr Arg Trp Ile Asn Leu Glu Tyr Asp Lys Ile Thr Arg Ile Val
 130 135 140

Gly Leu Asp Gln Tyr Leu Glu Ser Val Lys Lys His Lys Arg Leu Asp
 145 150 155 160

Val Cys Arg Ala Lys Met Gly Tyr Met Leu Gln
 165 170

<210> 66
 <211> 804
 <212> DNA
 <213> Human cytomegalovirus

<400> 66
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 gaacgctgtt acgatttcaa aatgtgcaat cgcttcaccg tcgcgtacgt attttcatga 180
 ttgtctgcgt tctgtggtgc gtctggatct gtctctcgac gtttctgata gccatgttcc 240
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 gacggcgaag tctgctacag tcccagaaaa acggctgaga ttcgcgggat cgtcaccacc 360
 atgacccatt cattgacacg ccaggctcgt cacaacaaac tgacgagctg caactacaat 420
 ccgtaagtct cttcctcgag ggccttacag cctatgggaa agtaagacag agggacaaaa 480
 catcattaata aaaaaagtct aatttcacgt tttgtacccc cccttcccct ccgtgttgta 540
 gggttatacct cgaagctgac gggcgaatac gctgcggcaa agtgaacgac aaggcgcagt 600
 acctgctggg cgccgctggc ggcgttcctt atcgatggat caacctggaa tacgacaaga 660
 tagccccgat cgtgggcctg gatcagtagc tggagagcgt taagaaacac aaacggctgg 720
 atgtgtgccg cgctaaaatg ggctatatgc tgcagtgaat aataaaatgt gtgtttgtcc 780
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<210> 67
 <211> 685
 <212> DNA
 <213> Human cytomegalovirus

<400> 67
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 gaacgctgtt acgatttcaa aatgtgcaat cgcttcaccg tcgcgtacgt attttcatga 180
 ttgtctgcgt tctgtggtgc gtctggatct gtctctcgac gtttctgata gccatgttcc 240
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 gacggcgaag tctgctacag tcccagagaaa acggctgaga ttgcgcgggat cgtcaccacc 360
 atgacccatt cattgacacg ccaggctcgt cacaacaaac tgacgagctg caactacaat 420
 ccgttatacc tcgaagctga cgggcgaata cgctgcggca aagtgaacga caaggcgcag 480
 tacctgctgg gcgccgctgg cggcggttccc tatcgatgga tcaacctgga atacgacaag 540
 atagcccga tcgtgggcct ggatcagtag ctggagagcg ttaagaaaca caaacggctg 600
 gatgtgtgcc gcgctaaaat gggctatatg ctgcagtga taataaaatg tgtgtttgtc 660
 caaaaaaaaa aaaaaaaaaa aaaaa 685

<210> 68
 <211> 180
 <212> DNA
 <213> Human cytomegalovirus

<400> 68
 atgagtcca aaaacctgac gccgttcttg acggcgttgt ggctgctatt gggtcacagc 60
 cgcggtgccgc gggtagcgcg agaagaatgt tgcgaattca taaacgtcaa ccacccgccg 120
 gaacgctgtt acgatttcaa aatgtgcaat cgcttcaccg tcgcgtacgt attttcatga 180

<210> 69
 <211> 59
 <212> PRT
 <213> Human cytomegalovirus

<400> 69

Met Ser Pro Lys Asn Leu Thr Pro Phe Leu Thr Ala Leu Trp Leu Leu
 1 5 10 15

Leu Gly His Ser Arg Val Pro Arg Val Arg Ala Glu Glu Cys Cys Glu
 20 25 30

Phe Ile Asn Val Asn His Pro Pro Glu Arg Cys Tyr Asp Phe Lys Met
 35 40 45

Cys Asn Arg Phe Thr Val Ala Tyr Val Phe Ser
 50 55

<210> 70
 <211> 780
 <212> DNA
 <213> Human cytomegalovirus

<400> 70
 atgagtccca aaaacctgac gccgttcttg acggcggttg ggctgctatt gggtcacagc 60
 cgcggtgccgc gggtagcgcg agaagaatgt tgcgaattca taaacgtcaa ccacccgccg 120
 gaacgctggtt acgattttcaa aatgtgcaat cgcttcaccg tcgcgtacgt atttttatga 180
 ttgtctgcgt tctgtggtgc gtctggattt gtctctcgac gtttctgata gccatgttcc 240
 atcgacgata ctcggaatg ccagagtaga ttttcatgaa tccacaggct gcggtgtccg 300
 gacggcgaag tctgctacag tcccagagaaa acggctgaga ttgcggggat cgtcaccacc 360
 atgaccatt cattgacacg ccaggctgta cacaacaaac tgacgagctg caactacaat 420
 ccgtaagtct cttcctcgag ggccttacag cctatgggaa agtaagacag agggacaaaa 480
 catcattaaa aaaaaagtct aatttcacgt tttgtacccc cccttcccct ccgtgttgta 540
 gggtatacct cgaagctgac gggcgaatac gctgcggaac agtgaacgac aaggcgagct 600
 acctgctggg cgccgctggc agcggtccct atcgatggat caacctggaa tacgacaaga 660
 taaccgggat cgtgggcctg gatcagtacc tggagagcgt taagaaacac aaacggctgg 720
 atgtgtgccg cgctaaaatg ggctatatgc tgcagtgaat aataaaatgt gtgtttgtcc 780

<210> 71
 <211> 529
 <212> DNA
 <213> Human cytomegalovirus

<400> 71
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 gaacgctggtt acgattttcaa aatgtgcaat cgcttcaccg tcgcgctgcg gtgtccggac 180
 ggcgaagtct gctacagtcc cgagaaaacg gctgagattc gcgggatcgt caccaccatg 240
 acccattcat tgacacgcca ggtcgtacac aacaaactga cgagctgcaa ctacaatccg 300
 ttatacctcg aagctgacgg gcgaatacgc tgcggcaaag tgaacgacaa ggcgcagtac 360

ctgctgggcg ccgctggcag cgttccctat cgatggatca acctggaata cgacaagata 420
 acccggatcg tgggcctgga tcagtacctg gagagcgta agaaacacaa acggctggat 480
 gtgtgccgcg ctaaaatggg ctatatgctg cagtgaataa taaaatgtg 529

<210> 72
 <211> 515
 <212> DNA
 <213> Human cytomegalovirus

<400> 72
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 gaacgctgtt acgatttcaa aatgtgcaat cgcttcaccg tcgcaactgc gtgtccggac 180
 ggcgaagtct gctacagtcc cgagaaacgg ctgagattcg cgggatcgtc accaccatga 240
 cccattcatt gacacgccag gtcgtacaca acaaactgac gagctgcaac tacaatctgt 300
 tatacctcga agctgacggg cgaatacgct gcggcaaagt gaacgacaag gcgcagtacc 360
 tgctgggchg cgctggcagc gttccctatc gatggatcaa cctggaatac gacaagataa 420
 cccggatcgt gggcctggat cagtacctgg agagcgttaa gaaacacaaa cggctggatg 480
 tgtgccgchg taaaatgggc tatatgctgc agtga 515

<210> 73
 <211> 171
 <212> PRT
 <213> Human cytomegalovirus

<400> 73

Met Ser Pro Lys Asn Leu Thr Pro Phe Leu Thr Ala Leu Trp Leu Leu
 1 5 10 15

Leu Gly His Ser Arg Val Pro Arg Val Arg Ala Glu Glu Cys Cys Glu
 20 25 30

Phe Ile Asn Val Asn His Pro Pro Glu Arg Cys Tyr Asp Phe Lys Met
 35 40 45

Cys Asn Arg Phe Thr Val Ala Leu Arg Cys Pro Asp Gly Glu Val Cys
 50 55 60

Tyr Ser Pro Glu Lys Thr Ala Glu Ile Arg Gly Ile Val Thr Thr Met
65 70 75 80

Thr His Ser Leu Thr Arg Gln Val Val His Asn Lys Leu Thr Ser Cys
85 90 95

Asn Tyr Asn Leu Leu Tyr Leu Glu Ala Asp Gly Arg Ile Arg Cys Gly
100 105 110

Lys Val Asn Asp Lys Ala Gln Tyr Leu Leu Gly Ala Ala Gly Ser Val
115 120 125

Pro Tyr Arg Trp Ile Asn Leu Glu Tyr Asp Lys Ile Thr Arg Ile Val
130 135 140

Gly Leu Asp Gln Tyr Leu Glu Ser Val Lys Lys His Lys Arg Leu Asp
145 150 155 160

Val Cys Arg Ala Lys Met Gly Tyr Met Leu Gln
165 170

<210> 74
<211> 1977
<212> DNA
<213> Human cytomegalovirus

<400> 74
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gacgcgtgct ctgcgcgct gcctgaccaa acccgttaca agtatgtgga acagctcgtg 180
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atacgacaag ataaccgga tcgtgggcct ggatcagtac ctggagagcg ttaagaaaca	1920
caaacggctg gatgtgtgcc gcgctaaaat gggctatatg ctgcagtga taataaa	1977

<210> 75
 <211> 1620
 <212> DNA
 <213> Human cytomegalovirus

<400> 75	
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gctctcgcgc gctgcctgac caaaccggtt acaagtatgt ggaacagctc gtggacctca	180
cgttgaacta ccactacgat gcgagccacg gcttggacaa ctttgacgtg ctcaagagaa	240
tcaacgtgac cgaggtgtcg ttgctcatca gcgacttttag acgtcagaac cgtcgcggcg	300
gcaccaacaa aaggaccacg ttcaacgccg ccggttcgct ggcgcctcac gcccgagacc	360
tcgagttcag cgtgcggctc ttgccaact agcctgcgtc acgggaaata atatgctacg	420
gcttctgctt cgtcaccact ttactgcct gcttctgtgc gcggtttggg caacgccttg	480
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ccgggactac agcgtgtctt ttcaggtgcg attgacgttc accgaggcca ataaccagac	1020
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<210> 76
 <211> 645
 <212> DNA

<213> Human cytomegalovirus

<400> 76

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tggtctaaac tgacgtatcc caaacgcgat gacgcggcga cgttttactg tccttttctc    180
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cccgagtgtc gcaacgagac cctgtatctg ctgtacaacc ggaagggcca gaccttgggtg    300
gagagaagct ccacctgggt gaaaaagggt atctgggtatc tgagcgggtcg caatcagacc    360
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ttcgtcgtca acgatggcac acgttatcag atgtgtgtga tgaaactgga gagctggggc    540
cacgtcttcc gggactacag cgtgtctttt caggtgcgat tgacgttcac cgaggccaat    600
aaccagactt acaccttctg caccatccc aatctcatcg ttgga                      645
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<210> 77

<211> 214

<212> PRT

<213> Human cytomegalovirus

<400> 77

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Met Leu Arg Leu Leu Leu Arg His His Phe His Cys Leu Leu Leu Cys
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```

```
Ala Val Trp Ala Thr Pro Cys Leu Ala Ser Pro Trp Phe Thr Leu Thr
20          25          30
```

```
Ala Asn Gln Asn Pro Ser Pro Pro Trp Ser Lys Leu Thr Tyr Pro Lys
35          40          45
```

```
Pro His Asp Ala Ala Thr Phe Tyr Cys Pro Phe Leu Tyr Pro Ser Pro
50          55          60
```

```
Pro Arg Ser Pro Ser Gln Phe Pro Gly Phe Gln Arg Val Ser Thr Gly
65          70          75          80
```

```
Pro Glu Cys Arg Asn Glu Thr Leu Tyr Leu Leu Tyr Asn Arg Glu Gly
85          90          95
```

Gln Thr Leu Val Glu Arg Ser Ser Thr Trp Val Lys Lys Val Ile Trp
 100 105 110

Tyr Leu Ser Gly Arg Asn Gln Thr Ile Leu Gln Arg Met Pro Arg Thr
 115 120 125

Ala Ser Lys Pro Ser Asp Gly Asn Val Gln Ile Ser Val Glu Asp Ala
 130 135 140

Lys Ile Phe Gly Ala His Met Val Pro Lys Gln Thr Lys Leu Leu Arg
 145 150 155 160

Phe Val Val Asn Asp Gly Thr Arg Tyr Gln Met Cys Val Met Lys Leu
 165 170 175

Glu Ser Trp Ala His Val Phe Arg Asp Tyr Ser Val Ser Phe Gln Val
 180 185 190

Arg Leu Thr Phe Thr Glu Ala Asn Asn Gln Thr Tyr Thr Phe Cys Thr
 195 200 205

His Pro Asn Leu Ile Val
 210

<210> 78
 <211> 214
 <212> PRT
 <213> Human cytomegalovirus

<400> 78

Met Leu Arg Leu Leu Leu Arg His His Phe His Cys Leu Leu Leu Cys
 1 5 10 15

Ala Val Trp Ala Thr Pro Cys Leu Ala Ser Pro Trp Phe Thr Leu Thr
 20 25 30

Ala Asn Gln Asn Pro Ser Pro Pro Trp Ser Lys Leu Thr Tyr Pro Lys
 35 40 45

Pro His Asp Ala Ala Thr Phe Tyr Cys Pro Phe Leu Tyr Pro Ser Pro
 50 55 60

Pro Arg Ser Pro Ser Gln Phe Pro Gly Phe Gln Arg Val Ser Thr Gly
65 70 75 80

Pro Glu Cys Arg Asn Glu Thr Leu Tyr Leu Leu Tyr Asn Arg Glu Gly
85 90 95

Gln Thr Leu Val Glu Arg Ser Ser Thr Trp Val Lys Lys Val Ile Trp
100 105 110

Tyr Leu Ser Gly Arg Asn Gln Thr Ile Leu Gln Arg Met Pro Arg Thr
115 120 125

Ala Ser Lys Pro Ser Asp Gly Asn Val Gln Ile Ser Val Glu Asp Ala
130 135 140

Lys Ile Phe Gly Ala His Met Val Pro Lys Gln Thr Lys Leu Leu Arg
145 150 155 160

Phe Val Val Asn Asp Gly Thr Arg Tyr Gln Met Cys Val Met Lys Leu
165 170 175

Glu Ser Trp Ala His Val Phe Arg Asp Tyr Ser Val Ser Phe Gln Val
180 185 190

Arg Leu Thr Phe Thr Glu Ala Asn Asn Gln Thr Tyr Thr Phe Cys Thr
195 200 205

His Pro Asn Leu Ile Val
210

<210> 79
<211> 171
<212> PRT
<213> Human cytomegalovirus

<400> 79

Met Ser Pro Lys Asn Leu Thr Pro Phe Leu Thr Ala Leu Trp Leu Leu
1 5 10 15

Leu Gly His Ser Arg Val Pro Arg Val Arg Ala Glu Glu Cys Cys Glu
20 25 30

Phe Ile Asn Val Asn His Pro Pro Glu Arg Cys Tyr Asp Phe Lys Met
35 40 45

Cys Asn Arg Phe Thr Val Ala Leu Arg Cys Pro Asp Gly Glu Val Cys
50 55 60

Tyr Ser Pro Glu Lys Thr Ala Glu Ile Arg Gly Ile Val Thr Thr Met
65 70 75 80

Thr His Ser Leu Thr Arg Gln Val Val His Asn Lys Leu Thr Ser Cys
85 90 95

Asn Tyr Asn Pro Leu Tyr Leu Glu Ala Asp Gly Arg Ile Arg Cys Gly
100 105 110

Lys Val Asn Asp Lys Ala Gln Tyr Leu Leu Gly Ala Ala Gly Ser Val
115 120 125

Pro Tyr Arg Trp Ile Asn Leu Glu Tyr Asp Lys Ile Thr Arg Ile Val
130 135 140

Gly Leu Asp Gln Tyr Leu Glu Ser Val Lys Lys His Lys Arg Leu Asp
145 150 155 160

Val Cys Arg Ala Lys Met Gly Tyr Met Leu Gln
165 170